

Claims:

- 1 1. A method for emulating a fibre channel port by a library of hard disk drives,
2 comprising:
3 providing an output port;
4 addressing one or more hard disk drives in the library using a fibre channel
5 communications protocol;
6 fetching the one or more hard disk drives; and
7 electrically coupling the one or more hard disk drives to the output port.
- 1 2. The method of claim 1, further comprising coupling the one or more hard disk
2 drives to a destination cell which is electrically connected to the output port.
- 1 3. The method of claim 1, further comprising issuing an instruction in response to
2 said step of addressing for waiting before initiating data communications with the one or more
3 hard disk drives.

1 4. The method of claim 1, further comprising receiving incoming data before said
2 step of electrically coupling the one or more hard disk drives to the output port, temporarily
3 storing said data, and writing said data to the one or more hard disk drives after said step of
4 electrically coupling the one or more hard disk drives to the output port.

1 5. The method of claim 1, further comprising temporarily storing data associated with
2 the address provided by said step of addressing prior to said step of fetching the one or more hard
3 disk drives, and outputting said data prior to said step of fetching the one or more hard disk drives
4 but subsequent to said step of addressing.

1 6. The method of claim 1, further comprising providing data associated with the
2 address provided by said step of addressing, recognizing said data with said fibre channel
3 protocol, and interpreting said data with an upper layer protocol.

1 7. An article of manufacture for emulating a fibre channel port for use in a library of
2 hard disk drives including a library controller, said article of manufacture comprising a computer-
3 readable storage medium tangibly embodying a program of executable computer instructions
4 which cause said controller to perform steps comprising:

5 addressing one or more hard disk drives using a fibre channel
6 communications protocol;

7 fetching the one or more hard disk drives with a robotic picker; and

8 electrically coupling the peripheral device to an output port.

1 8. The article of manufacture in claim 7, wherein said program of computer
2 instructions may further cause said controller to command said picker to couple the one or more
3 hard disk drives to a destination cell which is electrically connected to the output port.

1 9. The article of manufacture in claim 7, wherein said program of computer
2 instructions may further cause said controller to issue an instruction in response to said step of
3 addressing for waiting before initiating data communications with the one or more hard disk
4 drives.

1 10. The article of manufacture in claim 7, wherein said program of computer
2 instructions may further cause said controller to receive incoming data before said step of
3 electrically coupling the one or more hard disk drives to the output port, temporarily storing said
4 data, and writing said data to the one or more hard disk drives after said step of electrically
5 coupling the one or more hard disk drives to the output port.

1 11. The article of manufacture in claim 7, wherein said program of computer
2 instructions may further cause said library controller to temporarily store data associated with the
3 address provided by said step of addressing prior to said step of fetching the one or more hard

4 disk drives, and outputting said data prior to said step of fetching the one or more hard disk drives
5 but subsequent to said step of addressing.

1 12. The article of manufacture in claim 7, wherein said program of computer
2 instructions may further cause said library controller to receive data associated with the address
3 provided by said step of addressing, recognize said data with said fibre channel protocol, and
4 interpret said data with an upper layer protocol.

1 13. An apparatus for emulating a fibre channel port for use in a library of hard disk
2 drives, comprising a library having a fabric port connected to a host computer and an output port
3 connected to a destination cell adapted for removable coupling to a selected one of the hard disk
4 drives.

1 14. A method for communicating between a host computer and a library of one or
2 more types of memory elements controlled by a library controller, comprising the steps of:

3 forming a first association of a plurality of commands for instructing a
4 plurality of different types of memory elements which the host
5 computer expects the library to be according to a fibre channel
6 protocol;

7 forming a second association of said plurality of commands and a plurality
8 of codes particularly adapted for controlling respective memory
9 elements in the library;

10 receiving a command from a host computer according to the fibre channel
11 protocol;

12 identifying the type of memory element which the host computer expects
13 the library to be;

14 identifying said command by consulting said first association;

15 selecting, by the controller, one or more of the memory elements in the
16 library for carrying out the command;

17 identifying the associated said code by consulting said second association
18 for said selected memory elements; and

19 executing the identified code for carrying out the command in the library
20 with said selected memory elements.

1 15. The method of claim 14, wherein said step of executing the identified code further
2 comprises reading data from a hard disk drive in the library, formatting said data according to the
3 identified said protocol, and thereafter sending said data to the host computer.

1 16. The method of claim 14, wherein said step of carrying out the executed code
2 further comprises writing to a hard disk drive in the library.

1 17. An article of manufacture for use in communicating between one or more host
2 computers and a library of one or more types of memory elements controlled by a library
3 controller, said article of manufacture comprising a computer-readable storage medium tangibly
4 embodying a program of executable computer instructions which cause said controller to perform
5 steps comprising:

6 forming a first association of a plurality of commands for instructing a
7 plurality of different types of memory elements which the host
8 computer expects the library to be according to a fibre channel
9 protocol;

10 forming a second association of said plurality of commands and a plurality
11 of codes particularly adapted for controlling respective memory
12 elements in the library;

13 receiving a command from a host computer according to the fibre channel
14 protocol;

15 identifying the type of memory element which the host computer expects
16 the library to be;

17 identifying said command by consulting said first association;

18 selecting, by the controller, one or more of the memory elements in the
19 library for carrying out the command;

20 identifying the associated said code by consulting said second association
21 for said selected memory elements; and

22 executing the identified code for carrying out the command in the library
23 with said selected memory elements.

1 18. The article of manufacture of claim 17, wherein said program of computer
2 instructions may cause said library controller to execute the identified code at least by reading
3 data from a hard disk drive in the library, formatting said data according to the identified said
4 protocol, and thereafter sending said data to the host computer.

1 19. The article of manufacture of claim 17, wherein said program of computer
2 instructions may cause said library controller to execute the identified code at least by writing to a
3 hard disk drive in the library.